CLAIMS

What is claimed is:

23. (NEW)   A method of replicating information comprising:

managing a first repository comprising a list of first repository objects and state information about at least one of said first repository objects;

transmitting at least one message to a second repository via at least one messaging system;

receiving said at least one message at a second repository;

managing a second repository comprising a list of second repository objects and state information about at least one of said second repository objects.

24. (NEW)   The method of claim 23 further comprising said second repository determining from said at least one message whether an object is to be sent to said first repository.

25. (NEW)   The method of claim 23 further comprising updating said first and second repository objects.

26. (NEW)   The method of claim 23 further comprising creating a unique identifier (UID) associated with each of said first and second repository objects during an event chosen from the group consisting of creation of said each object, change of said each object, and deletion of said each object.

27. (NEW)   The method of claim 26 wherein said UID comprises an identifier identifying a creation site of said object.

28. (NEW)   The method of claim 26 wherein said UID comprises information derived from said object's content.

29. (NEW)   The method of claim 26 further comprising retaining a pre-event copy of each of said UIDs associated with said object after an event chosen from the group consisting of changing said object and deleting said object.

30. (NEW)   The method of claim 26 further comprising said second repository determining whether an object is to be sent to said first repository, wherein said determining comprises comparing said UIDs received in said at least one message with said UIDs stored at said second repository.

31. (NEW)   The method of claim 26 further comprising updating said first repository and updating said second repository; and at least one event chosen from the group consisting of identifying said objects created since said updating, identifying said objects changed since said updating, and identifying said objects deleted since said updating.

32. (NEW)   The method of claim 31 wherein said identifying said objects that have been created, changed, and deleted further comprises comparing said UIDs received with said UIDs stored at said first and second repositories.

33. (NEW)   The method of claim 23 wherein one of said at least one messages comprises state information.

34. (NEW)   The method of claim 23 wherein one of said at least one messages comprises an object.

35. (NEW)   The method of claim 23 wherein said at least one messaging system further comprises at least one store and forward messaging method.

36. (NEW)   The method of claim 23 wherein said at least one messaging system further comprises at least one electronic mail method.

37. (NEW)   The method of claim 25 further comprising:

updating said first repository list of objects to include at least one of said second repository objects.

38. (NEW)   The method of claim 33 further comprising:

updating said state information about at least one of said second repository objects using said state information about at least one of said first repository objects.

39. (NEW)   The method of claim 23 further comprising:

receiving said objects from another repository at each of said first and second repositories;

identifying said objects to be sent to said another repository from each of said first and second repositories.

40. (NEW)   The method of claim 39 further comprising:

transmitting said object to be sent to another repository to said first repository via said at least one messaging system, if said second repository determines said object is to be sent to said first repository.

41. (NEW)   The method of claim 39 wherein said receiving objects further comprises:

processing replication events associated with said received objects;

resolving dependencies associated with said received objects.

42. (NEW)   The method of claim 41 wherein said processing replication events further comprises:

discarding duplicate replication events;

processing any dependencies associated with said objects;

identifying a latest version of said objects.

43. (NEW)   The method of claim 41 wherein said resolving dependencies further comprises marking a dependency as satisfied in a dependent object if at least one of said objects is obtainable or already obtained and said at least one object obtainable or obtained is depended on by a said dependent object.

44. (NEW)   The method of claim 43 further comprising making said dependent object available for use if said dependency is marked satisfied.

45. (NEW)   The method of claim 41 wherein said processing replication events comprises modifying at least one object chosen from the group consisting of said first repository objects and said second repository objects.

46. (NEW)   A computer program product comprising:

a computer usable medium having computer readable program code for replicating information embodied therein, said computer readable program code configured to:

manage a first repository comprising a list of first repository objects and state information about at least one of said first repository objects;

transmit at least one message to a second repository via at least one messaging system;

receive said at least one message at a second repository;

manage a second repository comprising a list of second repository objects and state information about at least one of said second repository objects.

47. (NEW)   The computer program product of claim 46 wherein said computer program code configured to manage a second repository further comprises computer code configured to determine from said at least one message whether an object is to be sent to said first repository.

48. (NEW)   The computer program product of claim 46 further comprising computer program code configured to update said first and second repository objects.

49. (NEW)   The computer program product of claim 46 further comprising computer program code configured to create a unique identifier (UID) associated with each of said objects during an event chosen from the group consisting of creation of said each object, change of said each object, and deletion of said each object.

50. (NEW)   The computer program product of claim 49 wherein said UID comprises an identifier identifying the creation site of said object, a portion that uniquely identifies said object.

51. (NEW)   The computer program product of claim 49 further comprising computer program code configured to retain a copy of each pre-event copy of each of said UIDs associated with said object after an event chosen from the group consisting of changing said object, and deleting said object.

52. (NEW)   The computer program product of claim 49 further comprising computer program code configured to cause said second repository determine whether an object is to be sent to said first repository, wherein said determining comprises comparing UIDs received in said at least one message with UIDs stored at said second repository.

53. (NEW)   The computer program product of claim 49 further comprising computer program code configured to perform at least one event chosen from the group consisting of updating said first repository, updating said second repository, identify objects that have been created since said updating, identifying objects that have been changed since said updating, and identifying objects that have been deleted since said updating.

54. (NEW)   The computer program product of claim 53 wherein said computer program code configured to identify objects that have been created, changed, and deleted further comprising computer program code configured to compare UIDs received with UIDs stored at said first and second repositories.

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55. (NEW)   The computer program product of claim 46 wherein one of said at least one messages comprises state information.

56. (NEW)   The computer program product of claim 46 wherein one of said at least one messages comprises an object.

57. (NEW)   The computer program product of claim 46 wherein said at least one messaging system further comprises at least one store and forward messaging computer program product.

58. (NEW)   The computer program product of claim 46 wherein said at least one messaging system further comprises at least one electronic mail computer program product.

59. (NEW)   The computer program product of claim 48 further comprising computer program code configured to:

update said first repository list of objects to include at least one of said second repository objects.

60. (NEW)   The computer program product of claim 49 further comprising computer program code configured to:

update said state information about at least one of said second repository objects using said state information about at least one of said first repository objects.

61. (NEW)   The computer program product of claim 46 further comprising computer program code configured to:

receive said objects from another repository at each of said first and second repositories;

identify said objects to be sent to said another repository from each of said first and second repositories.

62. (NEW)   The computer program product of claim 61 further comprising computer program code configured to:

transmit said object to be sent to another repository to said first repository via said at least one messaging system, if said second repository determines said object is to be sent to said first repository.

63. (NEW)   The computer program product of claim 61 further comprising computer program code configured to:

process replication events associated with said received objects;

resolve dependencies associated with said received objects.

64. (NEW)   The computer program product of claim 63 further comprising computer program code configured to:

discard duplicate replication events;

process any dependencies associated with said objects;

identify a latest version of said objects.

65. (NEW)   The computer program product of claim 63 further comprising computer program code configured to mark a dependency as satisfied in a dependent object if at least one of said objects is obtainable or already obtained and said at least one object obtainable or obtained is depended on by a said dependent object.

66. (NEW)   The computer program product of claim 65 further comprising computer program code configured to make said dependent object available for use if said dependency is marked satisfied.

67. (NEW)   The computer program product of claim 63 wherein said computer program code configured to process replication events comprises computer program code configured to modify at least one object chosen from the group consisting of said first repository objects or said second repository objects.

68. (NEW)   A system of replicating information comprising:

a replication agent means for managing a first forum, said first forum comprising a list of first forum objects and a state of said first forum objects;

a means for transmitting at least one message to a second forum;

a means for receiving said at least one message at a second forum;

a replication agent means for managing a second forum, said second forum comprising a list of second forum objects and a state of said second forum objects.

69. (NEW)   The system of claim 68 further comprising a side replicator means for maintaining information about known objects known to said first site and a state of at least one other forum.

70. (NEW)   The system of claim 68 further comprising a first site event table means and a second site event table means for storing said first site state and said second site state.

71. (NEW)   The system of claim 68 further comprising a means for said second forum to determine from said at least one message whether at least one additional message is to be sent to said first forum.

72. (NEW)   The system of claim 68 further comprising a means for updating at least one first forum object and at least one second forum object.

73. (NEW)   The system of claim 68 further comprising a means for at least one event chosen from the group consisting of creating at least one object, changing at least one object, and deleting at least one object.

74. (NEW)   The system of claim 73 further comprising a means for associating said object with a new UID during said event.

75. (NEW)   The system of claim 74 further comprising a means for retaining a pre-event copy of each of said UIDs associated with said object after an event chosen from the group consisting of changing said each object and deleting said each object.

76. (NEW)   The system of claim 74 further comprising a means for identifying said objects that have been created, changed, and deleted by comparing received ones of said UIDs with stored ones of said UIDs stored at said first and second forums.

77. (NEW)   The system of claim 68 wherein said at least one message comprises said state of at least one first forum object.

78. (NEW)   The system of claim 68 wherein said at least one message comprises at least one first forum object.

79. (NEW)   The system of claim 68 wherein said means for transmitting said at least one message further comprises a means for storing and forwarding messages.

80. (NEW)   The system of claim 68 wherein said means for transmitting said at least one message further comprises a means for communicating electronic mail.

81. (NEW)   The system of claim 68 further comprising:

a means for receiving received objects from another forum at each of said first and second forums;

a means for identifying transfer objects to be sent to said another forum from each of said first and second forums.

82. (NEW)   The system of claim 81 further comprising:

a means for processing replication events associated with said received objects;

a means for resolving dependencies associated with said received objects.

83. (NEW)   The system of claim 82 further comprising:

a means for discarding duplicate replication events,

a means for processing dependencies associated with at least one second forum object,

a means for identifying a latest version of at least one second forum object.

84. (NEW)   The system of claim 83 further comprising:

a means for marking a dependency in a dependent object as satisfied; and

a means for making said dependent object available for use if said dependency is marked satisfied.

85. (NEW)   The system of claim 83 further comprising a means for modifying at least one object chosen from the group consisting of said first forum objects or said second forum objects.

86. (NEW)   A method of transmitting an object from a first site to a second site via a messaging system comprising:

maintaining, at said first site, transmission characteristics for said second site;

transmitting said object from said first site to said second site;

receiving, at said second site, said object;

determining, at said second site, whether said object is dependent on another object;

determining, at said second site, whether said another object upon which said object depends exists at said second site and whether at least one dependency of said another object has been satisfied.

87. (NEW)   The method of claim 86 wherein said transmitting further comprises:

determining a message length associated with at least one message to be sent to said second site;

composing a single message when said at least one message is less than said message length;

composing a plurality of messages when said at least one message exceeds said message length;

recomposing, at said second site, said plurality of messages into a single object independent of the order in which said plurality of messages are received at said second site.

88. (NEW)   The method of claim 87 further comprising:

transmitting an acknowledgment message to confirm receipt of said object by said second site;

monitoring at said first site said composed messages sent by said second site;

determining, using said transmission characteristics, whether said acknowledgment message should have been received from said second site;

transmitting said object when said acknowledgment message was not received within a time indicated by said transmission characteristics.

89. (NEW)   The method of claim 87 further comprising:

transmitting to said second site an identifier that identifies a predecessor object, said predecessor object comprising a predecessor to said object based on a sequence known to said first site and said second site;

determining whether said predecessor object exists at said second site;

requesting said predecessor object from said first site when said predecessor object does not exist at said second site.

90. (NEW)   A system comprising:

a first site;

a second site having a transmission characteristics;

at least one messaging system coupled to said first site and said second site, said messaging system transmitting an object from said first site to said second site;

said second site configured to:

receive said object from said first site;

determine whether said object is a dependent, wherein said dependent object is associated with another object;

determine whether said another object exists at said second site;

determine whether said association to said another object is satisfied.

91. (NEW)   The system of claim 90 wherein said second site is further configured to:

permit access to said object when said another object exists at said second site and at least one dependency of said another object has been satisfied;

deny access to said object when said another object does not exist;

deny access to said object at said second site when said another object's dependencies have not been satisfied.

92. (NEW)   The system of claim 90 further comprising:

a message length associated with at least one message to be sent to said second site;

a plurality of messages for transmission to said second site when said at least one message exceeds said message length;

a single object at said second site recomposed from said plurality of messages, independent of the order in which said plurality of messages are received at said second site.

93. (NEW)   The system of claim 90 further comprising:

an acknowledgement message for indicating receipt of said object by said second site.

94. (NEW)   The system of claim 93 further comprising:

a re-transmitted object comprising a copy of said object transmitted from said first site to said second site, wherein said re-transmitted object is re-transmitted from said first site to said second site if said acknowledgment message is not received within the time indicated by said transmission characteristics.

95. (NEW)   The system of claim 90 further comprising:

a predecessor object comprising a predecessor to said object transmitted to said second site based on a sequence known to said first site and said second site;

an identifier transmitted to said second site for identifying said predecessor;

a predecessor request message for requesting said predecessor object from said first site when said predecessor object does not exist at said second site.

96. (NEW)   A computer program product comprising:

a computer usable medium having computer readable program code for transmitting at least one object from a first site to a second site via a messaging system, said computer readable program code configured to:

maintain, at said first site, transmission characteristics for said second site;

transmit said at least one object from said first site to said second site;

receive, at said second site, said at least one object;

determine, at said second site, whether said at least one object can be classified as a dependent object, wherein said dependent object has a relationship to another object;

determine, at said second site, whether said another object exists at said second site;

determine whether said relationship to said another object is satisfied.

97. (NEW)   The computer program product of claim 96 further comprising computer program code configured to:

permit access to said at least one object at said second site when said another object exists at said second site and said relationship is satisfied;

deny access to said object at said second site when said another object does not exist;

deny access to said object at said second site when said relationship is not satisfied.

98. (NEW)   The computer program product of claim 96 further comprising computer program code configured to:

create one message addressed to a second site and a third site.

99. (NEW)   The computer program product of claim 96 further comprising computer program code configured to:

determining a message length associated with at least one message to be sent to said second site;

composing a single message when said at least one message is less than said message length;

composing a plurality of messages when said at least one message exceeds said message length;

recomposing, at said second site, said plurality of messages into a single object independent of the order in which said plurality of messages are received at said second site.

100. (NEW)   The computer program product of claim 96 further comprising computer program code configured to:

transmit to said first site from said second site an acknowledgment message confirming receipt of said at least one object by said second site.

101. (NEW)   The computer program product of claim 100 further comprising computer program code configured to:

monitor at said first site said composed messages sent by said second site;

determine, using said transmission characteristics, whether said acknowledgment message should have been received from said second site;

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transmit said object when said acknowledgment message was not received within a time indicated by said transmission characteristics.

102. (NEW)   The computer program product of claim 96 further comprising computer program code configured to:

transmit to said second site an identifier that identifies a predecessor object, said predecessor object being a predecessor to said at least one object based on a sequence known to both sites;

determine, at said second site, whether said predecessor object exists at said second site;

request said predecessor object from said first site when said predecessor object does not exist at said second site.

103. (NEW)   A system of transmitting an object from a first site to a second site via a messaging system comprising:

a means for maintaining, at said first site, an expected time to receive an acknowledgment message for said second site;

a means for transmitting said object from said first site to said second site;

a means for determining, at said second site, whether said at least one object comprises a dependency on another object;

a means for determining, at said second site, whether said another object exists at said second site;

a means for determining whether said dependency is satisfied.

104. (NEW)   The system of claim 103 further comprising:

a means for controlling access to said at least one object at said second site depending on whether said another object exists at said second site and whether said dependency is satisfied.

105. (NEW)   The system of claim 103 further comprising:

a means for determining whether said second site has said at least one object;

a means for determining whether a third site has said at least one object;

a means for multicasting said at least one message to said second and third sites if said second and third sites do not have said at least one object.

106. (NEW)   The system of claim 103 further comprising:

a means for determining a message length associated with at least one message to be sent to said second site;

a means for composing a single message when said at least one message is less than said message length;

a means for composing a plurality of messages when said at least one message exceeds said message length;

a means for recomposing, at said second site, said plurality of messages into a single object independent of the order in which said plurality of messages are received at said second site.

107. (NEW)   The system of claim 106 further comprising:

a means for reassembling said plurality of messages to resolve at least one dependency.

108. (NEW)   The system of claim 103 further comprising:

a means for transmitting to said first site from said second site an

acknowledgment message confirming receipt of said at least one object by said

second site.

109. (NEW)   The system of claim 108 further comprising:

a means for monitoring at said first site said composed messages sent by

said second site;

a means for determining, using said transmission characteristics, whether

said acknowledgment message should have been received from said second site;

a means for transmitting said object when said acknowledgment message

was not received within a time indicated by said transmission characteristics.

110. (NEW)   The system of claim 103 further comprising:

a means for transmitting to said second site an identifier that identifies a

predecessor object, said predecessor object being a predecessor to said at least

one object based on a sequence known to both sites;

a means for determining, at said second site, whether said predecessor

object exists at said second site;

a means for requesting said predecessor object from said first site when

said predecessor object does not exist at said second site.